

if these apertures are stopped with bird-lime the sharp sound continues to be produced with the same intensity.

Its origin must be sought in the mechanism by which the wing is set in motion. In buzzing insects the muscles of flight are not inserted directly upon the wing, but upon the pieces of the thorax which carry it. It is the movement of these that moves the wing and makes it vibrate. The thorax therefore undergoes alternate and incessant changes of form under the influence of the contraction of the motor muscles of the wing: in repose a section of this region represents an ellipse elongated vertically; muscular action transforms it into an ellipse elongated laterally. The entire thorax therefore vibrates successively in the direction of its two diameters. As the muscular masses are very powerful, this vibratory movement is very intense, as we may easily ascertain by holding between the fingers a Humble-bee with its wings cut off, but which still seeks to fly away. The thorax consequently forms a vibrating body, which directly concusses the surrounding air, just in the same way as the branch of a diapason for example. In the insects in question the vibrations are repeated a great number of times per second, and there is produced a musical sound which is nothing but the sharp sound characteristic of buzzing. Large insects produce the sharp sound with more intensity than small ones, because the vibrating surface of the thorax in contact with the air is more extensive.

If the thoracic sound, after the cutting away of the wings, is higher than the sound produced directly by the movement of the latter, this is because, during flight the resistance of the air moderates the velocity of contraction of the muscles; while, when the wings are suppressed, the muscles, vibrating without producing any useful effect, attain their maximum velocity.

After the removal of the wings, by attaching a style to the upper wall of the thorax, we may directly inscribe its vibrations; and in this way I obtained traces in which the number of vibrations corresponds exactly to the height of the sharp sound perceived by the ear. There can therefore be no doubt as to the thoracic origin of this sound.

Buzzing occurs only in the Hymenoptera and Diptera, because it is only in these insects that the deformation of the thorax by the action of the muscles of flight takes place over a surface sufficiently extensive to produce a perceptible sound.—*Comptes Rendus*, Oct. 7, 1878, p. 535.

On the Ascarides of the Seals and Toothed Whales.

By Dr. H. KRABBE.

Professor Leuckart's notice* of an Ascarid voided by a child in Greenland, which he described under the name of *Ascaris maritima*, and supposed to have probably belonged to a seal or some other

* Die menschlichen Parasiten, Bd. ii. 1876, p. 877.

Greenland mammal, led the author to examine the collection of *Ascarides* in the University Museum at Copenhagen, where he found about forty bottles of these worms obtained from seals, and about twenty bottles of specimens derived from toothed whales.

I. *Ascarides* from Seals.

O. Fabricius* enumerates three species of *Ascarides* in Greenland seals, namely *Ascaris phocæ*, *bifida*, and *tubifera*; but his descriptions are insufficient. Rudolphi† described the worm that he had the opportunity of examining under the name of *A. osculata*; and this was identified by Schneider with an *Ascaris* from *Phoca grælandica*, which he fully described. Baird‡ described *Ascaris similis* from an antarctic seal, but not sufficiently for the distinction of the species.

The forty bottles of *Ascarides* from seals, mostly from Greenland, in the museum contained a mixture of two different species, which, however, could hardly be distinguished by the naked eye.

1. *Ascaris osculata*, Rud., occurred in twenty-three collections, as follows:—from *Phoca grælandica* (10) from Greenland and Iceland; *P. barbata* (2) from Greenland; *Halichærus grypus* (3), no locality recorded; *Cystophora cristata* (1) from Greenland; and *Trichechus rosmarus* (2) from Greenland; and also (5) from unnamed seals at the Færøe Islands, Iceland, and Greenland. The number of worms in an individual seal amounted sometimes to 200 or 300. The proportion of males to females was about as two to three. The females attain a length of 80 millims. and the males of 60 millims. The red streak observed by Schneider at the base of the lips is not constant; the author never found it.

2. *Ascaris decipiens*, sp. n. This worm belongs to Schneider's first group, which also includes *A. maritima*, and in which the lips are denticulate and there is no intermediate lip. The lips, which are nearly equal, have in front a pair of broad rounded lobes, directed obliquely sideways, separated on each side by a notch from the rest of the lip; the teeth form three arched lines, one in the middle and one on each lobe. Of the caudal papillæ of the male the three hindmost are conical and diminish in length posteriorly; they are followed by three short processes on each side behind the anus. Those before the anus increase in length to the seventh or eighth and are arranged in a single row.

This species occurred in twenty-one collections—from *Phoca grælandica* (4), *P. barbata* (4), *P. hispida* (1), *P. vitulina* (6), *Cystophora cristata* (1), and *Trichechus rosmarus* (1), all from Greenland; and also in three unnamed seals from the Færøe Islands, Iceland, and Greenland. The species has also been found in a *Phoca vitulina* from the west coast of Slesvig. In one collection the number of worms was about 200, in the proportion of one male

* Fauna Grælandica, 1780, p. 272.

† Wiedemann's Archiv, Bd. ii. St. 1 (1801).

‡ Catalogue of Species of Entozoa, 1853, p. 19.

to two females. The length of the females about 60, of the males about 45 millims.

II. *Ascarides* from *Toothed Whales*.

Of these Schneider only describes *Ascaris lobulata*, found in *Platanista gangetica*. It belongs to the same group as *A. osculata*. Rudolphi described *A. simplex* from *Phocæna communis*; and Dujardin refers to the same species a worm from a dolphin taken near the Maldive Islands. The twenty bottles in the University Museum contain three species:—

1. *Ascaris lobulata*, Schn., from the buccal cavity of a Gangetic dolphin in the Hooghly.

2. *Ascaris simplex*, Rud. To this species the author refers all the *Ascarides* obtained from toothed whales and dolphins on the coasts of Denmark, the Færöes, and Greenland, namely:—from *Lagenorhynchus albirostris* (2), Denmark; *Beluga leucas* (7), Greenland; *Hyperoodon rostratus* (1), Færöes; and *Monodon monoceros* (3), Greenland. 177 individuals occurred in one whitefish, in the proportion of one male to two females. The latter reached 200, the males 130 millims. in length.

This worm belongs to Schneider's first group. The lips are very similar, and have in front a pair of lobes separated from the rest of the lip by a sinuosity; on the inner side of the lobes there is an armature of teeth. Of the caudal papillæ of the male the four nearest the apex are conical and arranged in pairs, the outer one of each pair being the longest. Close behind the anus are two short papillæ on each side, or sometimes only one large one; and on each side of the anus there is a group of six short papillæ.

Ascaris angulivalvis, Crepl., the only species described from a whalebone-whale, was obtained at Bergen by Koren from *Balaenoptera rostrata*. The author finds that it is identical with *A. simplex*.

3. *Ascaris conocephalus*, sp. n. This species was described by Diesing under the name of *Conocephalus typicus*; but the hood in front of the mouth described and figured by him does not belong to the worm, but is composed of coagulated mucus or of portions of the intestinal epithelium of the dolphin in which it was found. It has been obtained in great numbers, usually from the stomach of dolphins, from various parts of the Atlantic between Africa and America. Of 370 individuals in our collection about half were males. Females 90, males 70 millims. long.

This species is nearly allied to *A. simplex*. The labial lobes, which are armed with teeth, are narrower and separated by a deeper notch from the rest of the lip. Of the papillæ in the male three, or sometimes only two, of the hindmost are conical; close behind the anus there is on each side a group of seven short papillæ. The other papillæ are arranged in three well-marked rows, but they become smaller and less regular towards the anus.—*Oversigt af Kongl. Danske Vidensk. Selsk. Forhandl.* i Aaret, 1878, pp. 43–51.